Virginia

Standards of Learning Assessments

Test Blueprint

Grade 6 Mathematics

2016 Mathematics Standards of Learning

This revised test blueprint will be effective with the administration of the 2018-2019 Mathematics Standards of Learning (SOL) tests.

Notice to Reader

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Grade 6 Mathematics
Standards of Learning

Test Blueprint

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General Test Information

Test Blueprint

Much like the blueprint for a building, a test blueprint serves as a guide for test construction. The blueprint indicates the content areas that will be addressed by the test and the number of items that will be included by content area and for the test as a whole. There is a blueprint for each test (e.g., grade 3 reading, grade 5 mathematics, grade 8 science, Virginia and United States History).

The Grade 6 Mathematics blueprint contains information for two types of tests, the online computer adaptive test (CAT) and the traditional test. A CAT is an online assessment that is customized for every student based on how the student responds to the questions. This is in contrast to the traditional test in which all students who take a particular version (paper, large print, or braille) of the test respond to the same test questions. All online versions of the Grade 6 Mathematics Standards of Learning (SOL) test (including audio) are computer adaptive.

All students are required to take the online version of the SOL tests with the exception of students who meet the criteria for needing a paper test. All paper versions of the test (including large print and braille) will be administered using the traditional format. Beginning in spring 2019, there will no longer be a separate Plain English Mathematics assessment for English learners or students with disabilities who have documented significant language impairments. All test questions for Grade 6 Mathematics have been determined to meet the criteria for Universal Design. The Universal Design principles require that language that is not specific to the content area (e.g., mathematics) be simplified and test questions be written so they are accessible by all populations of students. The SOL test questions have been reviewed by Virginia teachers and have been determined to meet the criteria for Universal Design.

Reporting Categories

Each test covers a number of Standards of Learning. In the test blueprint, the SOL are grouped into categories that address related content and skills. These categories are labeled as reporting categories. For example, a reporting category for the Grade 6 Mathematics Standards of Learning test is *Computation and Estimation*. Each of the SOL in this reporting category addresses computation using addition, subtraction, multiplication, or division or requires the student to estimate the answer to a problem. When the results of the SOL tests are reported, the scores will be presented for each reporting category and as a total test score.

Assignment of Standards of Learning to Reporting Category

In the Grade 6 Mathematics SOL test, each SOL is assigned to only one reporting category. For example, SOL 6.2a-b is assigned to "Number and Number Sense."

Coverage of Standards of Learning

Due to the large number of SOL in each grade level content area, every Standard of Learning will not be assessed on every SOL test. By necessity, to keep the length of a test reasonable, each test will sample from the SOL within a reporting category. All SOL are eligible for inclusion on the traditional forms as well as the CAT forms.

Use of the Curriculum Framework

The Grade 6 Mathematics Standards of Learning, amplified by the Curriculum Framework, define the essential understandings, knowledge, and skills that are measured by the Standards of Learning tests. The Curriculum Framework asks essential questions, identifies essential understandings, defines essential content knowledge, and describes essential skills students need to master.

Use of Calculators

The first section of the test will be taken without the use of a calculator. The SOL 6.2a-b, 6.5a, 6.6a, and 6.6c will be assessed in the first section of the Grade 6 Mathematics test. All other SOL will be assessed in the second section with the use of a calculator.

Grade 6 Mathematics
Test Blueprint Summary Table

Reporting Category	Grade 6 SOL	Number of Items Computer Adaptive Test (CAT) Format	Number of Items Traditional Format
Number and Number Sense	**6.1** **6.2a*, b*** **6.3a-c** **6.4**	**8**	**9**
Computation and Estimation	**6.5a*, b, c** **6.6a*, b, c***	**10**	**12**
Measurement and Geometry	**6.7a-c** **6.8a-b** **6.9**	**9**	**11**
Probability, Statistics, Patterns, Functions, and Algebra	**6.10a-c** **6.11a-b** **6.12a-d** **6.13** **6.14a-b**	**15**	**18**
Number of Operational Items		**42**	**50**
Number of Field-Test Items**		**8**	**none**
Total Number of Items on Test		**50**	**50**

*Items measuring these SOL will be completed without the use of a calculator.

**Field-test items are being tried out with students for potential use on subsequent tests and will not be used to compute students' scores on the test.

Grade 6 Mathematics
Expanded Test Blueprint

Reporting Category: Number and Number Sense
Number of Items: 8 (CAT) 9 (Traditional)
Standards of Learning:

6.1 The student will represent relationships between quantities using ratios, and will use appropriate notations, such as $\frac{a}{b}$, a to b, and a:b.

6.2 The student will
a) represent and determine equivalencies among fractions, mixed numbers, decimals, and percents; and
b) compare and order positive rational numbers.

6.3 The student will
a) identify and represent integers;
b) compare and order integers; and
c) identify and describe absolute value of integers.

6.4 The student will recognize and represent patterns with whole number exponents and perfect squares.

Reporting Category: Computation and Estimation
Number of Items: 10 (CAT) 12 (Traditional)
Standards of Learning:

6.5 The student will
a) multiply and divide fractions and mixed numbers;
b) solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of fractions and mixed numbers; and
c) solve multistep practical problems involving addition, subtraction, multiplication, and division of decimals.

6.6 The student will
a) add, subtract, multiply, and divide integers;
b) solve practical problems involving operations with integers; and
c) simplify numerical expressions involving integers.

Reporting Category: Measurement and Geometry
Number of Items: 9 (CAT) 11 (Traditional)
Standards of Learning:

6.7 The student will
a) derive π (pi);
b) solve problems, including practical problems, involving circumference and area of a circle; and
c) solve problems, including practical problems, involving area and perimeter of triangles and rectangles.

6.8 The student will
a) identify the components of the coordinate plane; and
b) identify the coordinates of a point and graph ordered pairs in a coordinate plane.

6.9 The student will determine congruence of segments, angles, and polygons.

Reporting Category: Probability, Statistics, Patterns, Functions, and Algebra
Number of Items: 15 (CAT) 18 (Traditional)
Standards of Learning:

6.10 The student, given a practical situation, will
a) represent data in a circle graph;
b) make observations and inferences about data represented in a circle graph; and
c) compare circle graphs with the same data represented in bar graphs, pictographs, and line plots.

6.11 The student will
a) represent the mean of a data set graphically as the balance point; and
b) determine the effect on measures of center when a single value of a data set is added, removed, or changed.

6.12 The student will
a) represent a proportional relationship between two quantities, including those arising from practical situations;
b) determine the unit rate of a proportional relationship and use it to find a missing value in a ratio table;
c) determine whether a proportional relationship exists between two quantities; and
d) make connections between and among representations of a proportional relationship between two quantities using verbal descriptions, ratio tables, and graphs.

6.13 The student will solve one-step linear equations in one variable, including practical problems that require the solution of a one-step linear equation in one variable.

6.14 The student will

a) represent a practical situation with a linear inequality in one variable; and
b) solve one-step linear inequalities in one variable, involving addition or subtraction, and graph the solution on a number line.